

Claims

- (1) An aerodynamic vehicle comprising:
- a left side forward wing section;
 - a right side forward wing section connected to the left side forward
 - 5 wing section for movement of the left side and right side forward wing sections between first and second relative positions;
 - a left side rearward wing section;
 - a right side rearward wing section connected to the left side rearward
 - wing section for movement of the left side and right side rearward wing
 - 10 sections between first and second relative positions; and
 - the left side forward wing section being connected to the left side rearward wing section and the right side forward wing section being connected to the right side rearward wing section with there being an opening between the left side and right side forward wing sections and the left side
 - 15 and right side rearward wing sections with no other portion of the aerodynamic body being positioned in the opening.

- (2) The vehicle of Claim 1, further comprising:
- the left side and right side forward wing sections and the left side and
 - 20 right side rearward wing sections being positioned in a common plane.

- (3) The vehicle of Claim 2, further comprising:
- a forward pivot assembly connecting the left side and right side forward wing sections for relative pivoting movement.

(4) The vehicle of Claim 3, further comprising:

a rearward pivot assembly connecting the left side and right side rearward wing sections for relative pivoting movement.

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(5) The vehicle of Claim 4, further comprising:

the vehicle having a center axis that intersects the forward pivot assembly and the rearward pivot assembly, and the forward and rearward pivot assemblies moving along the center axis when the first and second

10 forward wing sections move between the first and second relative positions.

(6) The vehicle of Claim 1, further comprising:

the vehicle having a center axis;

the left side forward wing section and left side rearward wing section
15 projecting laterally outward from one side of the center axis; and

the right side forward wing section and the right side rearward wing section projecting laterally outward from an other side of the center axis.

(7) The vehicle of Claim 1, further comprising:

20 a left side pivot assembly connecting the left side forward wing section and the left side rearward wing section; and

a right side pivot assembly connecting the right side forward wing section and the right side rearward wing section.

(8) The vehicle of Claim 7, further comprising:

the vehicle having a transverse axis that intersects the left side pivot assembly and the right side pivot assembly, and the left side and right side pivot assemblies moving along the transverse axis when the left side and right side forward wing sections are moved between the first and second relative positions.

(9) The vehicle of Claim 1, further comprising:

the left side and right side forward wing sections and the left side and right side rearward wing sections having a cumulative first area when the left side and right side forward wing sections are in the first relative positions, and having a second cumulative area when the left side and right side forward wing sections are in the second relative positions, and the first cumulative area being larger than the second cumulative area.

(10) The vehicle of Claim 9, further comprising:

the first cumulative area being at least 30% larger than the second cumulative area.

(11) The vehicle of Claim 1, further comprising:

the left side and right side forward wing sections and the left side and right side rearward wing sections having a first aspect ratio when the left side and right side forward wing sections are in the first relative positions, and having a second aspect ratio when the left side and right side forward wing

sections are in the second relative positions, and the first aspect ratio being larger than the second aspect ratio.

(12) The vehicle of Claim 1, further comprising:

5 the left side and right side forward wing sections having a first wing span when the left side and right side forward wing sections are in the first relative positions, and having a second wing span when the left side and right side forward wing sections are in the second relative positions, and the first wing span being larger than the second wing span.

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(13) The vehicle of Claim 9, further comprising:

the left side and right side forward wing sections having leading edges that are positioned at a first sweep angle in the first relative positions of the left side and right side forward wing sections, and being positioned at a
15 second sweep angle in the second relative positions of the left side and right side forward wing sections, and the first sweep angle being smaller than the second sweep angle.

(14) An aerodynamic vehicle consisting essentially of:

20 a left side forward wing section;

a right side forward wing section connected to the left side forward wing section for movement between first and second relative positions of the left side and right side forward wing sections;

a left side rearward wing section;

a right side rearward wing section connected to the left side rearward wing section for movement between first and second relative positions of the left side and right side rearward wing sections;

the left side forward and rearward wing sections being connected
5 together for relative movement; and

the right side forward and rearward wing sections being connected together for relative movement.

(15) The vehicle of Claim 14, comprising:
10 the left side and right side forward wing sections and the left side and right side rearward wing sections being positioned in a common plane.

(16) The vehicle of Claim 14, comprising:
the right side forward wing section being connected to the left side
15 forward wing section by a forward pivot assembly.

(17) The vehicle of Claim 16, comprising:
the right side rearward wing section being connected to the left side rearward wing section by a rearward pivot assembly.

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(18) The vehicle of Claim 14, comprising:
the left side forward and rearward wing sections being connected together by a left side pivot assembly; and

the right side forward and rearward wing sections being connected together by a right side pivot assembly.

(19) The vehicle of Claim 14, comprising:

5 the left side and right side forward wing sections and the left side and right side rearward wing sections having a first cumulative area when the left side and right side forward wing sections are in the first relative positions, and having a second cumulative area when the left side and right side forward wing sections are in the second relative positions, and the first cumulative
10 area being larger than the second cumulative area.

(20) The vehicle of Claim 19, comprising:

the second cumulative area being at least 30% larger than the first cumulative area.

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(21) The vehicle of Claim 14, further comprising:

the left side and right side forward wing sections and the left side and right side rearward wing sections having a first aspect ratio when the left side and right side forward wing sections are in the first relative positions, and
20 having a second aspect ratio when the left side and right side forward wing sections are in the second relative positions, and the first aspect ratio being larger than the second aspect ratio.

(22) The vehicle of Claim 14, further comprising:

the left side and right side forward wing sections having a first wing span when the left side and right side forward wing sections are in the first relative positions, and having a second wing span when the left side and right side forward wing sections are in the second relative positions, and the first wing span being larger than the second wing span.

(23) The vehicle of Claim 19, further comprising:

the left side and right side forward wing sections having leading edges that are positioned at a first sweep angle in the first relative positions of the left side and right side forward wing sections, and being positioned at a second sweep angle in the second relative positions of the left side and right side forward wing sections, and the first sweep angle being smaller than the second sweep angle.

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(24) An aerodynamic vehicle comprising:

a forward wing having a leading edge defining a forward end of the vehicle;

a rearward wing having a trailing edge defining a rearward end of the vehicle;

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the forward wing being connected to the rearward wing; and

an opening between the forward wing and the rearward wing with there being no other portion of the aircraft in the opening.

(25) The vehicle of Claim 24, further comprising:

the forward wing being connected to the rearward wing for movement between first and second relative positions of the forward and rearward wings.

5 (26) The vehicle of Claim 25, further comprising:

the forward and rearward wings having a first cumulative area in the first position and the forward and rearward wings having a second cumulative area in the second position, and the first cumulative area being larger than the second cumulative area.

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(27) The vehicle of Claim 26, further comprising:

the first cumulative area being at least 30% larger than the second cumulative area.

15 (28) The vehicle of Claim 24, further comprising:

the forward and rearward wings being coplanar.

(29) The vehicle of Claim 24, further comprising:

the forward wing and rearward wing extending completely around the
20 opening.

(30) The vehicle of Claim 24, further comprising:

the opening having a shape that changes on movement of the forward and rearward wings between the first and second relative positions.

(31) The vehicle of Claim 24, further comprising:

the left side and right side forward wing sections and the left side and right side rearward wing sections having a first aspect ratio when the left side and right side forward wing sections are in the first relative positions, and
5 having a second aspect ratio when the left side and right side forward wing sections are in the second relative positions, and the first aspect ratio being larger than the second aspect ratio.

10 (32) The vehicle of Claim 24, further comprising:

the left side and right side forward wing sections having a first wing span when the left side and right side forward wing sections are in the first relative positions, and having a second wing span when the left side and right side forward wing sections are in the second relative positions, and the first
15 wing span being larger than the second wing span.

(33) The vehicle of Claim 26, further comprising:

the left side and right side forward wing sections having leading edges that are positioned at a first sweep angle in the first relative positions of the left side and right side forward wing sections, and being positioned at a
20 second sweep angle in the second relative positions of the left side and right side forward wing sections, and the first sweep angle being smaller than the second sweep angle.